REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the foregoing amendments and the following remarks.

Claims 34-36, 38-42, 69-122, 129, 130, 132-151, 155-176, and 180-186 are pending in the application, with Claims 34, 38, 69, 95, 121, 122, 129, 133, 156, 158, 181 and 184 being independent. Claims 129, 133, 156, 158, 181 and 184 have been amended. Support for these changes can be found in the original application, as set forth below. No new matter has been added.

Claims 34-36, 38-42 and 69-122 have been withdrawn from consideration as being directed to a non-elected invention. Applicant has retained these claims in order to preserve Applicant's rights. Should these claims need to be canceled in order to advance prosecution, the Examiner is requested to contact Applicant's representative.

Substance of Interview

Initially, Applicant wishes to thank the Examiner for the courtesies extended to Applicant's attorney at the personal interview conducted on May 12, 2005. At the interview, Applicant's attorney proposed amendments to each of independent claims 129, 133, 156, 158, 181, and 184. The proposed amendments were discussed with respect to representative Claim 129. In connection with the proposed amendments, Applicant's attorney presented Appendix B (a revised copy of which is enclosed), showing representative graphical objects composited in

accordance with the expression trees shown in Fig. 5 (the active region), Fig. 6 (the clip region), and Fig. 7 (the effective region). As requested at the interview, Applicant has revised Appendix B to better show how Figs. 5-7 relate to the active, clip, and effective regions of Applicant's invention. In particular, the Appendix shows one example of what is meant by "at least one of said effective regions determined for one of said compositing operation nodes being a proper subset of the clip region for said one compositing operation node," as presently recited in independent claims 129, 133, 156, 158, 181, and 184.

In addition, as requested at the interview and noted on the Interview Summary form, Applicant has further clarified the feature "the expression tree remains unchanged," by amending the claims to recite that "the structure of the expression tree remains unchanged throughout the creation of the pixel image." Applicant submits that this amendment clarifies the issue raised at the interview and noted in the Interview Summary form.

35 U.S.C. § 112 Rejections

Claims 138-145, 163-170, 173, and 174 are rejected under 35 U.S.C. § 112, second paragraph, as lacking antecedent basis for the claim feature the "compositing operation node has a complex left operation," and Claims 148 and 149 are rejected for lacking antecedent basis for the term "complex." These rejections are respectfully traversed.

The first time the phrase "complex left operation" is used in each of Claims 138, 163, and 173, it is preceded by the indefinite article "a." For example, Claim 138 recites that "the

corresponding compositing operation node has a complex left operand." Likewise, in Claim 148, the term "complex" is preceded by the article "a." Claims 139-145, 149, 164-170, and 174 depend from one of Claims 138, 148, 163, and 173. Therefore, Claims 138-145, 163-170, 173, and 174 cannot be said to lack antecedent basis for the foregoing claim terms.

Moreover, a description of these claim terms can be found on page 16 of the original specification, with reference to nodes of a compositing expression. Accordingly, Applicant submits that these claim terms comply with all aspects of § 112.

Art Rejection

Claims 129, 130, 132-151, 155-176, and 180-186 are rejected under 35 U.S.C. § 102(e), as being anticipated by U.S. Patent No. 5,745,121 (Politis). This rejection is respectfully traversed. Nevertheless, without conceding the propriety of the rejection, Claims 129, 133, 156, 158, 181 and 184 have been amended to even more clearly recite features of Applicant's invention.

Independent Claim 129, is directed to a method of creating a pixel image. The pixel image is formed by rendering and compositing a plurality of graphical objects according to an expression tree representing a compositing expression for the image. At least one of the graphical objects is non-rectangular. The expression tree comprises a plurality of nodes each representing one of the objects or a compositing operation for combining graphical objects or results of other compositing operations. Each of the graphical objects has a predetermined object

outline forming a region comprising a plurality of pixels therein. The method determines an active region for each of the graphical object nodes. The active region for each particular graphical object node is equal to the region inside the predetermined object outline for the graphical object represented by the particular graphical object node. An active region is determined for each of the compositing operation nodes. The active region for each particular compositing operation node is equal to the intersection of the active regions of each child node of the particular compositing operation node. A clip region is determined for each of the compositing operation nodes. The clip region for each particular compositing operation node is equal to the intersection of the active region of the particular compositing operation node and the clip region of a parent compositing operation node of the particular compositing operation node. An effective region is then determined for each of the compositing operation nodes. The effective region for each particular compositing operation node is equal to the intersection of the clip region of the particular compositing operation node and the active regions defined by the active region outlines of the child nodes of the particular compositing operation node. At least one of the effective regions determined for one of the compositing operation nodes is different in area from the clip region for the one compositing operation node. The method then applies the compositing operation represented by each operation node to the pixels falling wholly within the corresponding effective region for the operation node to create the image, wherein pixels falling outside the effective regions determined for the expression tree remain uncomposited in creating

the image and the structure of the expression tree remains unchanged throughout the creation of the pixel image.

The Politis patent is directed to methods and apparatuses for optimizing the composition of graphical elements. In the Politis patent, operators having graphical elements as operands are used, in which the operators combine the operands according to produce new graphical elements. An expression tree is formed, the nodes of which comprise the graphical elements. Instructions are then derived from the expression tree. (See, e.g., column 8, lines 16-33). Bounding box methods are used for locating active areas of graphical elements from the nodes. (See, e.g., column 12, lines 45-64). Manipulation of the expression tree is used to reduce the expected execution time of the compositing commands. (See, e.g., column 18, lines 2-10). The description of the overall process of compilation and execution of a series of programming instructions indicates that optimization of the expression tree occurs prior to production of a rendered image. (See column 22, lines 26-62). However, as discussed further below, the Politis patent fails to disclose or suggest at least the following features of Applicant's invention, as recited in independent Claim 129: (1) determining an active region for each of the graphical object nodes, (2) determining an effective region for each of the compositing operation nodes, and (3) the structure of the expression tree remains unchanged throughout creation of the pixel image.

First, the Politis patent fails to disclose or suggest determining an active region for each of the graphical object nodes, the active regions for each particular graphical object node being

equal to the region inside the predetermined object outline for the graphical object represented by the particular graphical object node, as recited in independent Claim 129.

As described at page 15, lines 25 and 26 of the original specification, the active region of an object is defined to be the region inside the object's outline.

The Office Action states at page 7, that "Politis in [the] abstract discloses that bounding box methods are used for locating (determining) active areas (regions) of graphical elements (objects) from the nodes." Additionally, at column 13, lines 56 to 58, the Politis patent discloses that for each of the leaf nodes 28-32 (i.e., the claimed graphical object nodes), the bounding box of the graphical element which is to be rendered is first calculated. However, the bounding boxes of the Politis patent cannot be said to correspond to the active regions of Applicant's invention, since a bounding box is only an approximation to the outline of an object, while the active regions of Applicant's invention are equal to the region inside the predetermined object outline for the graphical object. For example, as can be seen from the bounding box 31 for the circle of Fig. 17, the bounding box is only an approximation of the outline of the circle. The outline of the bounding box 31 of the circle does not define a region inside the predetermined object outline, as presently recited in independent Claim129.

Second, the Politis patent fails to disclose or suggest determining an effective region for each of the compositing operation nodes, . . . at least one of said effective regions determined for one of said compositing operation nodes being a proper subset of the clip region for said one compositing operation node, as presently recited in independent Claim 129.

Page 28, lines 25 to 29 of the original specification describe that the effective regions for each node in an expression tree representing the image are calculated by setting the effective region to the intersection of the active regions of the node's operands and the node's clipping region, if the node is an operation node. Page 24, lines 22 to 23 of the specification describes that the effective region of an operation is generally not the same as the clipping region of the sub-expression that the operation forms the root of. The effective region is usually a proper subset of (i.e., not equal to) the clipping region of the sub-expression.

The Response to Arguments section states at page 2 of the Office Action that "Politis in Fig. 22 illustrates that the graphical element 64 (i.e., an effective region) is generally a proper subset of the clipping region, in this case, it covers a whole set of clipping region." Also, on page 8 the Office Action states that "Politis in Fig. 22 illustrates the effective region (item 64), that it equal to the intersection of the clip region (item 61), and item 64 is considered as [an] active region." Thus, as seen in Fig. 22 of Politis, and acknowledged in the Office Action, the item 64 is equal to the clip region 61.

If, for the sake of argument, the region 64 was considered to be an effective region, as suggested in the Office Action, the Politis patent cannot be said to disclose or suggest that at least

one of said effective regions determined for one of said compositing operation nodes is a proper subset of the clip region for said one compositing operation node, as the term subset is generally understood (e.g., Webster's Online Dictionary defines the prefix "sub-" as "b : subordinate portion of; subdivision of <subcommittee> <subspecies>"). That is, a subset is something less than, and not equal to, the larger set of which the subset is a part. In contrast, as stated in the Office Action, the clip region of the Politis patent covers a whole set (not a subset) of the clipping region.

An example of this distinction can be seen in Appendix B, which is enclosed herewith. In Appendix B, Figs. 5, 6, and 7 of the present specification have been reproduced. As described at page 9, lines 21 to 28 of the specification, Fig. 5 shows an expression tree in which the expression for the active region is shown next to each level, Fig. 6 shows the expression tree of Fig. 5 in which the expression for the clipped active region is shown next to each level, and Fig. 7 shows the expression tree of Fig. 5 in which the expression for the effective region is shown next to each level.

Alongside each of the reproduced expression trees of Figs. 5, 6, and 7 of Appendix B are images formed by circular graphical objects marked A, B, C, D and E, which are composited in accordance with the corresponding expression tree. In the image corresponding to Fig. 5, the active region is shaded. In Fig. 6, the clipping region of the "over" operation nodes is $(B \cap C) \cup D$, and in the image corresponding to Fig. 6, the clipping region is shaded. In Fig. 7, the effective region of the "over" operation node is $(B \cap C) \cap D$, and in the image corresponding to Fig. 7, the

effective region is shaded. As seen in Figs. 6 and 7 of Appendix B, the effective region for the "over" operation is not equal to the clipping region for the "over" operation. Rather, the effective region is a proper subset of the clipping region.

Accordingly, the Politis patent fails to disclose or suggest determining an effective region for each of the compositing operation nodes, . . . at least one of said effective regions determined for one of said compositing operation nodes being a proper subset of the clip region for said one compositing operation node, as presently recited in independent Claim 129.

Third, the Politis patent fails to disclose or suggest that the structure of the expression tree remains unchanged throughout the creation of the image.

The Response to Arguments section states at page 5 of the Office Action that "Politis in col. 3, lines 54-67 teaches also a method of optimizing an expression tree. . . comprising the steps of . . . altering said expression tree." Applicant agrees that the Politis patent teaches a method where the expression is altered or changed. However, this is contrary to the present invention, as claimed in independent claim 129, which recites that the structure of the expression tree remains unchanged throughout the creation of the image.

For example, Fig. 5 of the present specification shows an expression tree in which the expression for the active region is shown next to each level. Fig. 8 shows an optimal level activation table for the expression tree of Fig. 5, following the determination of the claimed effective regions for the expression tree of Fig. 5. As seen by a comparison of Figs. 5 and 8, the

structure of the expression of Fig. 5 does not change in determining the effective regions for the expression tree.

In contrast, the Politis patent teaches that those portions of the expression tree whose bounding boxes have been minimized to be null, can be deleted from the expression tree (see column 18, lines 1-6 of the Politis patent) or rearranged (column 18, lines 7-10 of the Politis patent). The Politis patent further describes at column 22, lines 26-28 and 44-52, that the method can perform optimization of the expression syntax tree as part of the overall process of compilation and execution of a series of programming language instructions. Accordingly, the teachings of the Politis patent are contrary to the claimed feature of Claim 129 that the structure of the expression tree remains unchanged.

The Response to Arguments section states at page 5 of the Office Action that "If a person skill[ed] in the art does not run the method of optimizing, the expression tree remains unchanged." Here the Office Action appears to be saying that if a person skilled in the art does nothing to the expression tree then the expression tree will remain unchanged. Applicant can only agree with the Office Action on this point. However, if the optimization of the Politis patent is not run, efficiency of the rendering process cannot be increased, and this benefit of the Politis patent cannot be realized.

In contrast, the present invention modifies the manner in which the operands of the compositing expression tree represented by the expression tree are composited, thereby

improving the rendering efficiency, while the structure of the expression tree itself remains unchanged.

Also, notwithstanding the disclosure in the Politis patent that the expression tree is altered, the Examiner suggested at the interview that the expression tree of the Politis patent remains unchanged for at least some period of time during the compositing operation. Assuming, for the sake of argument, that the Examiner's suggestion is correct, the Politis patent still does not disclose or suggest that the structure of the expression tree remains unchanged throughout the creation of the image.

For at least the foregoing reasons, Applicant submits that independent Claim 129 is patentable over the cited art.

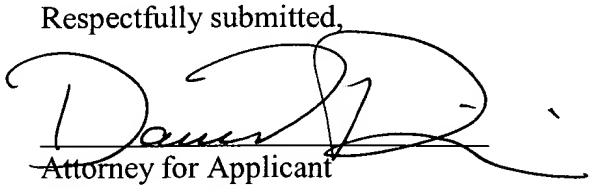
Independent Claims 133, 156, 158, 181, and 184 recite features corresponding to those of Claim 129 discussed above, and are allowable for at least the same reasons.

Dependent claims 130, 132, 134-151, 155, 157, 159-176, 180, 182, 183, 185 and 186 also are allowable for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Individual consideration of each dependent claim is requested.

Accordingly, Applicant submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



Attorney for Applicant
David A. Divine
Registration No. 51, 275

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3800
Facsimile: (212) 218-2200
DAD/eab

DC_MAIN 201757v2